

# The Augusta Chronicle

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## COLUMNS

# Campbell Vaughn: When it comes to insecticides, you need to mix it up for maximum effect

**Campbell Vaughn** Columnist

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There are a lot of folks who don't like bugs. Count the number of exterminator trucks out on the road and you can see that people don't mind paying to get rid of insects.

I admit that I am squeamish when it comes to roaches. You can call them palmetto bugs all you want, but I call them roaches and I don't want them in my house.

There are numerous insecticides available to dispose of these creepy crawlers, but the diverse ways they attack insects are what I find fascinating.

Insecticides disrupt the insect's ability to live long and prosperous lives in a variety of ways. The different methods for harming the pest are referred to as "mode of action" or MOA.

Insecticides don't just kill by causing a tiny bug heart attack. Insecticides do a mixture of things to insects that result in death. Mixing the modes of action on insecticides helps to prevent insects from building an immunity to a particular product.

The most common MOA is to affect the insect's nervous system. To understand this mode of action, it is important to have a basic understanding of how the nervous system operates. In insects, the nervous system is composed of a series of highly specialized, interconnected cells, along which travel electrical charges called impulses. The uninterrupted transmission of impulses along this series of cells is required for a nervous system to function properly. When exposed to these types of MOA chemicals, the nervous system becomes overexcited, resulting in tremors and uncoordinated movement.

In insects, prolonged or irreversible disruption of a normal functioning nervous system will result in death. Rest in peace palmetto bug.

Insect growth regulators (IGRs) are used by the pest management industry to disrupt critical physiological functions associated with normal insect growth, development, and reproduction (egg production). IGRs are typically not immediately toxic to adult insects. Juvenile insects are the ones harmed by these types of insecticides. So, timing of application is essential.

One interesting way IGRs work is they will tell the insect to skip a phase of development or not mature at all. Vamoose, no more insects.

**Campbell Vaughn:** With its hills and valleys, Augusta's climate stands apart in Georgia. Some insecticides inhibit energy production. Insects killed by these chemicals die on their feet.

Other chemicals affect a thin covering of wax on an insect's body. This waxy substance helps to prevent water loss from the surface.

When insects encounter one of these chemicals, they absorb them in their protective waxy coverings. That results in rapid water loss and eventually death from dryness. Insecticidal soaps also have this mode of action.

There are some other environmentally friendly options for insecticides that have unique modes of action. Azadirachtin is the active ingredient in neem extracts and has a mammal toxicity. It acts as a feeding deterrent and starves the insect.

Horticulture oils are some of my favorites for scale on camellias. When applied, they cover the insect and smother them. No air, no bugs.

So, when treating against insect pests, consider the mode of action. Try and diversify the ingredients and modes of action to avoid resistance and to maximize kill rate. The insects may not appreciate it, but who wants palmetto bugs in the house?

